ASPECTS OF THE BIOLOGY OF COMMERCIAL PENAEID PRAWNS IN TORRES STRAIT

The Torres Strait Project, which is funded by the Queensland state government, was initiated in July 1985 to investigate the movement and distribution of the commercial prawn species in Torres Strait and to assess seasonal and area closures to ensure that they are being applied in the most effective way. The findings of the research project are of international importance as the Torres Strait prawn fishery is jointly fished and managed by Australia and Papua New Guinea.

Data from monthly otter and beam trawl samples taken between January 1986 and December 1989, and prawn tagging, are being used to investigate the life cycles of the brown tiger (*P. esculentus*), endeavour (*M. endeavouri*) and red spot king (*P. longistylus*) prawns in Torres Strait. Due to tidal constraints in Torres Strait it was necessary to use a daytime water jet beam trawl to sample the seagrass nursery areas on the Warrior Reefs.

An unusual feature of the Torres Strait prawn fishery is that the juvenile seagrass nurseries are located on coral reef platforms (mainly the Warrior Reefs) rather than coastal estuarine mud-flats.

Data indicate that brown tiger prawns move off the seagrass nurseries on the Warrior Reefs into the shallow silty waters to the west of the reefs, at a very small size, then grow and migrate from the closed area west of the Warrior Reefs, eastward into the fishery.

Spawning in brown tiger prawns in Torres Strait occurs year round with three distinct peaks of activity that vary considerably in intensity and duration between years. The yearly spawning pattern produces a series of age classes within each year that results in a complex pattern of recruitment into the fishery. Due to the complexity of the recruitment pattern it is difficult to set an optimal seasonal closure period. As the fishing fleet is highly mobile, a difference in closure timing to that in other areas could result in an extreme 'pulse fishing' effect that may negate any beneficial effect of the closure.

Industry believes that the seasonal closure in Torres Strait opened too late this year thus missing the main recruitment into the fishery. Catches have been much lower than usual this year. Brown tiger prawns tagged in a closed area to the west of the fishery, moved to the eastern side of the fishery before being recaptured. This indicates that the season may have opened later than the optimal time to harvest that particular pulse of recruiting prawns.

Data indicate that areas with high densities of undersized prawns are restricted to the western side of the fishery so an extension of the area closures may be a more appropriate management strategy than a total area seasonal closure. The whole system of area and seasonal closures for both Torres Strait and the east Queensland Coast are currently being reviewed at meetings involving representatives of industry, management and research.

Future research will be aimed at investigating spawning and recruitment patterns of endeavour and red spot king prawns and using fisheries simulation models to assess various closure strategies for the Torres Strait fishery.

The findings of the first three years of the project are detailed in a QDPI Information Series publication, Q190018, titled 'Torres Strait Prawn Project: A Review of research 1986–88'. Editor J.E. Mellors.

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